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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/931,485 | 08/17/2001 | Shinichi Tsutsumi | SON-2189 | 3667 |

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EXAMINER

HASHEM, LISA

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2645

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/931,485

Applicant(s)

TSUTSUMI, SHINICHI

Examiner

Lisa Hashem

Art Unit

2645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-8 are pending in this office action.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,107,960 by Krasner in view of U.S. Patent No. 6,240,142 by Kaufman et al, hereinafter Kaufman.

Regarding claim 1, Krasner discloses a semiconductor apparatus (Figure 2, 150; see Abstract; column 3, lines 59-64) comprising: a plurality of input terminals (Figure 2: 100, 111) for receiving an intermediate-frequency signal; variable gain amplifier or low noise amplifier (LNA) in receiving circuitry (Figure 2, 102) for amplifying the intermediate-frequency signal inputted via said plurality of input terminals (column 6, lines 1-13); and a demodulator (Figure 2, 103) for subjecting the intermediate-frequency signal that has been passed through said variable gain amplifier to demodulation for output (see Figure 2; column 5, lines 26-36; column 6, lines 1-13).

Krasner does not disclose a semiconductor apparatus comprising a quadrature demodulator.

Kaufman discloses a receiving system that comprises a quadrature demodulator (Figure 3, 310) for subjecting the intermediate-frequency signal that has been passed through filters and/or amplifiers to demodulation for output (column 8, line 60 - column 9, line 27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Krasner to include a quadrature demodulator as taught by Kaufman for outputting an I signal and a Q signal. One of ordinary skill in the art would have been lead to make such a modification to provide a complex control system including a quadrature demodulator that limits reduction in power consumption and is used in conjunction with a receiving system of a semiconductor apparatus.

Regarding claim 2, Krasner discloses a portable terminal apparatus (see Figure 2, 150; column 2, line 64 – column 3, line 9; column 3, lines 59-64) comprising: a first receiving system for receiving a quadrature modulated signal and converting the quadrature modulated signal into an intermediate-frequency signal for output (Figure 2: Cellular Telephone; column 5, lines 17-36); a second receiving system comprising at least one system for inherently receiving a modulated signal and converting the modulated signal into an intermediate-frequency signal for output (Figure 2: GPS Receiver; column 4, lines 6-17); an IF stage for processing both the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system (Figure 2, 109; column 3, lines 24-35); and a signal processing system for processing the signal of said first receiving system that has been passed through said IF stage and the signal of said second receiving system that has been passed through said IF stage (Figure 2: 104, 115; column 8, lines 19-27).

Kaufman does not disclose an IF stage and a signal processing system.

Krasner does not disclose a portable terminal apparatus comprising: a second receiving system receiving a BPSK modulated signal and converting the BPSK modulated signal.

Kaufman discloses an improved quadrature modulator and demodulator comprising: a first receiving system (see Figure 2) for receiving a quadrature modulated signal and converting the quadrature modulated signal into an intermediate-frequency signal for output (column 5, line 66 – column 6, line 67; column 8, lines 40-59); a second receiving system (see Figure 3) comprising at least one system for inherently receiving a BPSK modulated signal and converting the BPSK modulated signal into an intermediate-frequency signal for output (column 8, lines 60-66).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Krasner to include a BPSK modulated signal as taught by Kaufman in order for the second receiving system to handle a BPSK modulated signal. One of ordinary skill in the art would have been lead to make such a modification to provide modulation of a digital type, such as phase shift keying.

Regarding claim 3, a portable terminal apparatus as claimed in claim 2 mentioned above, wherein Krasner further discloses said IF stage has at least one of a variable gain amplifier or low noise amplifier (LNA) in receiving circuitry (Figure 2, 102) for amplifying the intermediate-frequency signal of said first receiving system and the intermediate-frequency signal of said second receiving system and a demodulator (Figure 2, 103) for subjecting the intermediate-frequency signals that have been passed through the variable gain amplifier to quadrature demodulation for output (see Figure 2; column 5, lines 26-36; column 6, lines 1-13).

Krasner does not disclose a portable terminal apparatus comprising a quadrature demodulator.

Kaufman discloses a receiving system that comprises a quadrature demodulator (Figure 3, 310) for subjecting the intermediate-frequency signal that has been passed through filters and/or amplifiers to demodulation for output (column 8, line 60 - column 9, line 27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Krasner to include a quadrature demodulator as taught by Kaufman for outputting an I signal and a Q signal. One of ordinary skill in the art would have been lead to make such a modification to provide a complex control system including a quadrature demodulator that limits reduction in power consumption and is used in conjunction with a receiving system of a portable telephone apparatus.

Regarding claim 4, a portable terminal apparatus as claimed in claim 3 mentioned above, wherein Krasner discloses said IF stage (Figure 2, 109) has said demodulator (Figure 2, 103). Krasner further discloses a correlator to demodulate received signals (column 4, lines 36-38).

Krasner does not disclose the signal processing system includes: a phase shifter, an adder, and a correlator.

Kaufman discloses said quadrature demodulator that is implemented with a application specific integrated circuit (ASIC) includes: a phase shifter for making an I signal and a Q signal of said second receiving system obtained by demodulating the intermediate-frequency signal by said quadrature demodulator coincide with each other in phase (column 9, lines 15-22); an adder for adding the I signal and the Q signal together that have been passed through said phase shifter (column 9, lines 22-27); and a correlator or mixer for demodulating said BPSK modulated signal

on the basis of an addition output of said adder (column 9: lines 8-9 and lines 22-27).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Krasner to include a signal processing system that includes: a phase shifter, an adder, and a correlator as taught by Kaufman for demodulating a BPSK modulated signal. One of ordinary skill in the art would have been lead to make such a modification in order to demodulate the I and Q signals and perform signal processing on said signals.

Regarding claim 5, a portable terminal apparatus as claimed in claim 3 mentioned above, wherein Krasner discloses said IF stage (Figure 2, 109) has said demodulator (Figure 2, 103). Krasner further discloses a correlator to demodulate received signals (column 4, lines 36-38).

Krasner does not disclose the signal processing system includes a correlator.

Kaufman discloses said signal processing system includes a correlator or mixer for demodulating said BPSK modulated signal on the basis of an I signal or a Q signal of said second receiving system obtained by demodulating the intermediate-frequency signal by said quadrature demodulator (column 9: lines 1-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Krasner to include a signal processing system that includes: a correlator as taught by Kaufman for demodulating a BPSK modulated signal. One of ordinary skill in the art would have been lead to make such a modification in order to demodulate the I and Q signals and perform signal processing on said signals.

Regarding claim 6, a portable terminal apparatus as claimed in claim 3 mentioned above, wherein when said IF stage has said variable gain amplifier and said quadrature demodulator, Krasner further discloses said portable terminal apparatus includes a control means for fixing gain of said variable gain amplifier at about a maximum gain in demodulating said BPSK modulated signal (column 6, line 51 – column 7, line 47).

Regarding claim 7, a portable terminal apparatus as claimed in claim 3 mentioned above, wherein when said IF stage has said variable gain amplifier and said quadrature demodulator, Krasner further discloses said portable terminal apparatus includes a control means for controlling gain of said variable gain amplifier to a maximum gain while maintaining linearity on the basis of a demodulated signal obtained by demodulating said BPSK modulated signal (column 6, line 51 – column 7, line 54).

Regarding claim 8, a portable terminal apparatus as claimed in claim 3 mentioned above, wherein when said IF stage has said variable gain amplifier and said quadrature demodulator, Krasner further discloses said portable terminal apparatus includes a control means for controlling gain of said variable gain amplifier to about a maximum gain even with nonlinearity on the basis of a demodulated signal obtained by demodulating said BPSK modulated signal (column 6, line 51 – column 7, line 54).

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- U.S. Patent Publication Application No. US 2003/0128680 by Odenwalder et al disclose demodulation of a received high rate CDMA wireless signal is obtained by filtering a

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complex received signal to provide a complex pilot filter signal; wherein channels can be configured for BPSK modulation and the use of gain adjusts allow the transmit system to adapt to various radio channel conditions

5. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Or faxed to:

(703) 872-9314 (for formal communications intended for entry)

Or call:

(703) 306-0377 (for customer service assistance)

Hand-delivered responses should be brought to: Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (703) 305-4302. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (703) 305-4895. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

LH

lh

May 25, 2004

FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

